


CLAIMS

- Q 11
A 2
1. Injection manifold for an apparatus including at least a first tubing from a source of food material and at least a first fill tube for filling pouches formed from flexible material, the injection manifold comprising, in combination: at least a first injection connector including a fill pipe having a first end and a second end and including at least a first injection tube intersecting with the fill pipe intermediate the first and second ends, with the first end being removably sealingly connectable to the tubing, with the second end being removably sealingly connectable to the first fill tube, with the food material flowing from the source of food material through the tubing, the fill pipe, and the fill tube in a flow direction, with the injection tube allowing introduction of a food ingredient into the food material flowing through the fill pipe.
 2. The injection manifold of claim 1 with the introduction of the food ingredient occurring in the flow direction after the fill pipe.
 - Q 12
A 3
 3. The injection manifold of claim 2 further comprising, in combination: a supply tube extending through the injection tube into the fill pipe and the fill tube with the food ingredient being introduced into the food material through the supply tube, with the supply tube having a cross sectional size considerably smaller than the fill pipe and fill tube so as not to adversely affect the food material flowing through the fill pipe and fill tube.
 4. The injection manifold of claim 3 with the injection tube being generally linearly straight to the flow direction in the fill tube; and with the supply tube having an end opening located adjacent to an inside surface of the fill tube.
 5. The injection manifold of claim 4 with the flow direction in the fill tube being vertically oriented.
 6. The injection manifold of claim 3 with the first and second ends of the fill pipe each including a radially extending seal flange; and with the injection manifold further comprising, in combination: a first releasable clamp for sealingly connecting the flange of the first end of the fill pipe to the first tubing, and a second releasable clamp for sealingly connecting the flange of the second end of the fill pipe to the fill tube.
 7. The injection manifold of claim 3 with the supply tube extending beyond the fill pipe and into the fill tube for introducing the food ingredient in the flow direction after the fill pipe.

8. The injection manifold of claim 3 with the supply tube including means for increasing the streaking effect of the food ingredient into the food material.

9. The injection manifold of claim 8 with the increasing means comprising at least a first duct formed in the supply tube and extending at an acute angle upstream of the supply tube.

10. The injection manifold of claim 9 with the supply tube having an inside diameter; with the duct having a diameter in the order of one-half of the inside diameter; with the acute angle being in the order of 45° ; with the supply tube having an end opening of a size equal to the inside diameter; and with the increasing means further comprising, in combination: a second duct formed on the diametric opposite side of the supply tube than the first duct and axially spaced from the first duct.

 11. Apparatus comprising, in combination: a fill tube including a first end and a second end, with food material flowing from a source of food material through the fill tube in a flow direction; a forming station including an open forming area, with the second end of the fill tube extending through the forming area; means for providing a strip of flexible material, with the strip of flexible material extending through the open forming area and being folded to form an elongated tubular member around the second end of the fill tube; means for sealing the strip of flexible material into a tube having top and bottom seals; and an injection tube intersecting with the fill tube intermediate the first and second ends, with the injection tube allowing introduction of a food ingredient into the food material flowing through the fill tube.

12. The apparatus of claim 11 further comprising, in combination: a supply tube extending through the injection tube into the fill tube with the food ingredient being introduced into the food material through the supply tube, with the supply tube having a cross sectional size considerably smaller than the fill tube so as not to adversely affect the food material flowing through the fill tube.

13. The apparatus of claim 12 with the injection tube being linearly straight to the flow direction from the fill tube into the elongated tubular member; and with the supply tube having an end opening located adjacent to an inside surface of the fill tube.

14. The apparatus of claim 13 with the flow direction from the fill tube into the elongated tubular member being vertically oriented.

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15. The apparatus of claim 12 further comprising, in combination: a seal between the supply tube and the injection tube, with the seal allowing the supply tube to be removably extended into the injection tube.

16. The apparatus of claim 12 with the fill tube comprising a fill pipe having the first end and a third end, with the fill tube further comprising a fill duct having the second end and a fourth end, with the injection tube intersecting with the fill pipe intermediate the first and third ends; and with the apparatus further comprising, in combination: a first releasable clamp for sealingly connecting the third end of the fill pipe to the fourth end of the fill duct.

17. The apparatus of claim 16 with the first and third ends of the fill pipe each including a radially extending seal flange.

18. The apparatus of claim 12 with the supply tube including means for increasing the streaking effect of the food ingredient into the food material.

19. The apparatus of claim 18 with the increasing means comprising at least a first duct formed in the supply tube and extending at an acute angle upstream of the supply tube.

20. The apparatus of claim 19 with the supply tube having an inside diameter; with the duct having a diameter in the order of one-half of the inside diameter; with the acute angle being in the order of 45°; with the supply tube having an end opening of a size equal to the inside diameter; and with the increasing means further comprising, in combination: a second duct formed on the diametric opposite side of the supply tube than the first duct and axially spaced from the first duct.

Sub 21. Method for producing a food item comprising: flowing a flowable food product through a fill tube in a flow direction; and introducing a food ingredient into the flowing flowable food product through a supply tube located inside of the fill tube, with the supply tube extending into the flow tube in the flow direction, with the supply tube having a cross sectional size considerably smaller than the fill tube so as not to adversely affect the flowable food material flowing through the fill tube; with the food ingredient being introduced into the flow of flowable food product in a pattern which does not intermix throughout the flowable food material after the flowable food material passes through the fill tube.

22. The method of claim 21 with flowing the flowable food product comprising flowing the flowable food product through the fill tube including a fill pipe

and an injection tube extending from the fill pipe, with the supply tube extending through the injection tube and into the fill pipe.

23. The method of claim 22 with introducing the food ingredient comprising introducing the food ingredient through the supply tube which is generally linear straight and which has an end opening located generally adjacent to an inside surface of the fill tube.

24. The method of claim 23 with introducing the food ingredient comprising introducing the food ingredient through the supply tube which is generally vertical in the fill pipe.

25. The method of claim 21 with flowing the flowable food product comprising flowing a cultured dairy product through the fill tube.

26. The method of claim 25 with introducing the food ingredient comprising introducing the food ingredient being a carminic acid adjusted to a pH of below 12 and above 9.5.

27. The method of claim 25 with flowing the flowable food product comprising flowing yogurt through the fill tube; and with introducing the food ingredient comprising supplying the food ingredient in the form of dye, pigment or colorant.

28. The method of claim 27 with flowing the flowable food product comprising flowing yogurt having a viscosity of 8,000 to 40,000 cps at around 5°C.

29. The method of claim 21 with introducing the food ingredient comprises introducing the food ingredient into the flow of flowable food product in an irregular and random shape.

30. The method of claim 21 with introducing the food ingredient comprising introducing the food ingredient through the supply tube having an entry point to the flowing flowable food product spaced from a free end of the supply tube.

Sub P6 31. The method of claim 30 with introducing the food material comprising ~~introducing the food ingredient through the supply tube having the entry point in the~~ form of a duct formed in the supply tube and extending at an acute angle upstream of the supply tube.